November 25, 2003

To: Nebraska Physicians, Physician Assistants, and Advanced Practice Registered Nurses

From: Nebraska Health and Human Services System, Richard A. Raymond, MD, Chief Medical Officer

Subject: Severe Acute Respiratory Syndrome (SARS): Preparing for possible re-emergence

To contact a public health official regarding reportable diseases:

Douglas County	**Lancaster County**	**All other counties:**
444-7214 (work hours)	**441-8053 (work hours)**	**402-471-2937 (all hours)**
444-7000 (after hours)	**441-8000 (after hours, request Communicable Disease Program)**	

Although it is not known if SARS will re-emerge this winter, the CDC is concerned enough to recommend that we be prepared to respond. It is most likely that a re-emergence would occur in China, Hong Kong, or Taiwan. It is extremely unlikely that it will return for the first time in Nebraska. If there is a re-emergence of SARS anywhere in the world, we will have to be ready for possible importation via travelers. As we have learned from the experiences of China and Toronto, Canada, rapid identification of cases, isolation, and quarantine are our best defense. We would like to remind you of the key clinical features of SARS, laboratory tests, infection control, and reporting of cases.

Key clinical and epidemiologic features

Infection by SARS coronavirus (SARS-CoV) causes severe, atypical pneumonia, and has a median incubation period of 4-6 days (range 2 – 10 days). Case fatality rates are highest in the elderly (approximately 50%). Initial symptoms include a prodrome of fever (>38C), myalgia, headache, shortness of breath, non-productive cough in most patients. (Diarrhea was also present in many patients.) Lower respiratory symptoms (clinical evidence of pneumonia, hypoxia, etc) appear 3 to 7 days following the prodrome. (Upper respiratory symptoms are typically absent.) In all confirmed SARS patients, a chest radiograph or CT scan showed evidence of atypical pneumonia within 7 days of onset of symptoms. Lymphopenia and elevated LDH and CK were common laboratory findings. For more information, see the CDC SARS website (http://www.cdc.gov/ncidod/sars).

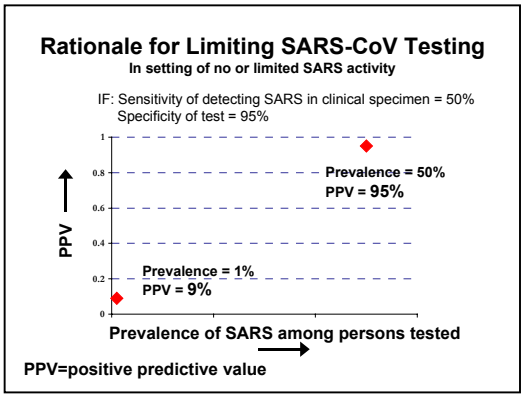
Laboratory testing – recommended only in the event of a return anywhere in the world

CDC and the Nebraska Public Health Laboratory (NPHL) can test for SARS Coronavirus (SARS-CoV) by polymerase chain reaction (RT-PCR) testing and detection of SARS-CoV antibody by enzyme immunoassay (EIA). Testing requires public health preapproval (contacts above) and only in specific situations where strong clinical and epidemiologic evidence suggests that SARS should be suspected. Tests done at commercial laboratories do not use the same reagents and will NOT be considered by CDC as confirmation of SARS. Following is a description of SARS laboratory tests.

- Polymerase Chain Reaction (RT-PCR): Because virus is not consistently shed early in the disease, RT-PCR has poor sensitivity (50%). Sensitivity can be improved if multiple samples are tested over more than one day if SARS is strongly suspected. A negative RT-PCR will not rule out SARS.
- SARS-CoV antibody EIA: Antibody seroconversion occurs in most SARS patients by 28 days after disease onset (sometimes by 8-10 days), but is not useful in early diagnosis when isolation and treatment decisions must be made. Antibody seroconversion from negative to positive or a four-fold rise in antibody titer from acute to convalescent serum specimens confirms recent infection. SARS can be ruled out by a negative antibody test only if the specimen was taken at least 28 days after onset of symptoms.
- Viral Culture: Viral culture for SARS coronavirus must be done in a Biosafety Level 3 (BSL-3) laboratory. Culture was useful in identifying the virus initially, but will not be routinely performed for diagnosis because virus is not consistently shed early in the disease. A negative viral culture for SARS-CoV does not rule out SARS.

In the absence of SARS activity anywhere in the world, SARS testing will be used only in cases of clusters of severe unexplained atypical pneumonia in health care workers or recent (within 10 days) travelers to China, Hong Kong, or Taiwan.

If SARS returns anywhere in the world, surveillance will be heightened, and ill patients with a recent travel history to affected areas may be tested for SARS coronavirus in consultation with public health. However, because of the poor sensitivity of RT-PCR for detection of virus early in the disease, every effort should be made to identify alternative diagnoses.



Organisms to consider in the differential diagnosis of SARS include: Influenza A or B; tuberculosis; *Chlamydophila* (previously *Chlamydia*) *pneumoniae*; *Legionella pneumophila*; respiratory viruses such as RSV, adenovirus, parainfluenza; *mycoplasma pneumoniae*; psittacosis (especially in bird owners); *Coxiella burnetii* (Q fever); actinomycosis.

Antibody testing to rule out SARS may be done after 28 days, however decisions on isolation would obviously have to be made prior to that. Ruling out SARS should be done with caution and only with tests with high positive predictive value which explain the patient's illness well. Consider the following tests if SARS is suspected: Chest x-ray, blood culture, sputum gram stain, viral culture/DFA for respiratory pathogens, acid-fast stain, influenza antigen, urinary antigen for cryptococcus and legionella, serology for *M. pneumoniae, C. pneumoniae, Legionella*. If SARS re-emerges, we will send additional information regarding specimen collection, handling and transportation to the NPHL for approved tests. (For more information, see: http://www.cdc.gov/ncidod/sars/lab.htm)

Infection control

The transmission of SARS is largely confined to the symptomatic phase of infection, and lasts for up to 10 days following resolution of symptoms. Spread occurs primarily through large droplet spread, but smaller droplet or airborne has occurred rarely. Therefore it is recommended that patients who are hospitalized be isolated in negative pressure rooms with contact, droplet, and airborne isolation. Procedures that cause aerosolization of patient secretions (such as nebulizer treatments) should be done in appropriate isolation areas with personal protection (TB precautions, including the use of N95 respirator masks) for care providers. (For more information, see: http://www.cdc.gov/ncidod/sars/ic.htm)

Case reporting

As a friendly reminder, reporting of suspected cases of SARS is required by Title 173 Neb. Admin. Code, ch. 1 section 1-003.01B (Clusters, Outbreaks or Unusual Events). This regulation states that "clusters, outbreaks, or unusual events" fall under reportable communicable diseases and should be reported to public health authorities immediately. It is vital that cases be recognized and isolated quickly in order to prevent spread to health care providers and other close contacts of patients. Your local health department has been given information on SARS and is working with us. Notifying your local health department in addition to the State is encouraged, but not mandatory.